

**RECEIVED  
CENTRAL FAX CENTER**Application Serial No. 10/536,601  
Reply to final office action of August 19, 2008

NOV 12 2008

PATENT  
Docket: CU-4232**Amendments to the Claims**

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

**Listing of claims:**

1. **(currently amended)** In an apparatus for analyzing orbit and attitude data of a low-earth orbit satellite to establish a task schedule, and generating a satellite command, a low earth orbit satellite command planning apparatus comprising:
  - a satellite event predictor for predicting various events related to the satellite;
  - a satellite task schedule planner for referring to the predicted various events and to inputted satellite tasks to schedule a satellite task schedule;
  - a satellite telecommand planner for generating a set of telecommand data to be executed by the satellite according to the satellite task schedule established by the satellite task schedule planner; **[[and]]**
  - a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite;
  - a first user interface for applying a mapping rule in accordance to a satellite task name and a parameter condition; and**
  - a second user interface for selecting desired commands from a list of available commands to define a relative time command sequence in the satellite task schedule.**

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2. (previously presented) The apparatus of claim 1, wherein the satellite task schedule established by the satellite task schedule planner include an ID, an execution time, and a parameter, and the satellite telecommand planner compares the parameter condition with mapping rules of the mapping rule applier, and automatically generates a set of satellite commands corresponding to the mapping rules matched with the condition.

3. (currently amended) The apparatus of claim 1, ~~further comprising a wherein~~ the first user interface for establishing the mapping rules, ~~and wherein such that~~ the first user interface comprises:

a list display for displaying a mapping rule list;

an information display for displaying a mapping rule name, [[a]] the satellite task name to which the mapping rule is applied, and [[a]] the relative time command sequence; and

a condition display for displaying a mapping condition ~~according in accordance~~ to [[a]] the parameter condition of the satellite task name, and the mapping condition includes a plurality of logical operation conditions and comparison conditions.

4. (original) The apparatus of claim 3, wherein the logical operation conditions and comparison conditions include a logical product (AND), a logical sum (OR), an equal sign (=), a greater than sign (>), and a less than sign (<).

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5. **(currently amended)** The apparatus of claim 3, ~~further comprising a wherein~~  
the second user interface for defining the relative time command sequence ~~and~~  
~~wherein such that~~ the second user interface comprises:

a list display for displaying ~~[[a]] the list of available commands relative time~~  
~~command sequence list;~~

a command display for displaying ~~[[a]] the~~ list of available commands that can  
be added to ~~a name of~~ the relative time command sequence; and

a command sequence display for displaying ~~a set of commands~~ the selected  
commands included in ~~the name of~~ the relative time command sequence; and

wherein the second user interface for selecting desired commands selects  
~~the command included in the command display and edits and for editing the~~  
relative time ~~[[a]]~~ command ~~[[set]]~~ sequence of the command sequence display.

6. **(currently amended)** A satellite command planning method for a satellite  
control system to generate a satellite telecommand from a satellite task schedule,  
comprising:

predicting, using a task analysis and planning system (TAPS), various satellite  
events;

applying, using a first user interface, a mapping rule in accordance to a  
satellite task name and a parameter condition;

comparing, using the TAPS, a satellite task included in a plurality of satellite task  
schedules with ~~[[a]] the~~ predefined mapping rule when the satellite task schedules are  
input into the TAPS;

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generating, using the TAPS, a set of commands defined by a corresponding mapping rule when the mapping rule corresponding to a condition of the satellite task is found after the comparison, and comparing a next satellite task with a next mapping rule when no mapping rule corresponding to the satellite task is found;

planning, using the TAPS, a preliminary satellite command plan based on the predicted various satellite events and the generated set of satellite commands;

**selecting, using a second user interface, desired commands from a list of available commands to define a relative time command sequence in the satellite task schedule;** and

inserting, using the TAPS, a satellite command indicator additionally needed for the satellite command from the preliminary satellite command plan to establish a finalized telecommand plan.

7. (previously presented) The method of claim 6, wherein a single mapping rule includes a plurality of sets of satellite commands in the generating step, the generating step comprises selecting a single set of satellite commands corresponding to a parameter of the satellite task from among the sets of satellite commands.

8. **(currently amended)** In a control system for monitoring and controlling a low earth orbit satellite, a LEO (low earth orbit) satellite control system comprising:

an antenna for executing radio communication with the satellite;

a satellite operating system for receiving a telemetric signal of the satellite, processing and analyzing the signal, and transmitting a telecommand signal to the

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satellite through the antenna;

a task analysis and planning system (TAPS) for analyzing orbit and attitude data of the satellite, for predicting various satellite events, and for inputting satellite task schedules to establish a finalized telecommand plan by applying a plurality of mapping rules according to the established task schedule to generate a set of telecommand data;

a first user interface for applying a mapping rule in accordance to a satellite task name and a parameter condition;

a second user interface for selecting desired commands from a list of available commands to define a relative time command sequence in the satellite task schedule; and

an interface for transmitting and receiving data between the systems.

9. (previously presented) The LEO satellite control system of claim 8, wherein the TAPS comprises:

a satellite event predictor for predicting various events related to the satellite;

a satellite task schedule planner for referring to the predicted various events and to inputted satellite tasks to schedule a satellite task schedule;

a satellite telecommand planner for generating a set of telecommand data to be executed by the satellite according to the satellite task schedule established by the satellite task schedule planner; and

a mapping rule applier including a plurality of mapping rules applied to the respective inputted satellite tasks of the satellite.

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10. **(currently amended)** The LEO satellite control system of claim 8, wherein the satellite operating system comprises:

a signal transmit/receive converter for receiving a telemetric signal of the satellite and transmitting a telecommand signal, corresponding to the finalized ~~telecomman~~ telecommand plan, to the satellite through the antenna;

a satellite telesurveillance unit for processing and analyzing the telemetric signal received from the satellite to monitor the states of the satellite; and

a satellite telecommand transmitter for transmitting a control command required for the satellite.

11. (previously presented) The method of claim 6 further comprising sending through an ethernet the telecommand plan to a satellite operating system (SOS).

12. (previously presented) The method of claim 11 further comprising transmittting the telecommand plan to a Low Earth Orbit (LEO) satellite.

13. (previously presented) The method of claim 6 wherein the predicting step is performed with a satellite event predictor of the TAPS.

14. (previously presented) The method of claim 6 wherein the generating step is performed with a satellite task schedule planner of the TAPS.

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15. (previously presented) The method of claim 6 wherein the planning step is performed with a satellite telecommand planner of the TAPS.

16. (previously presented) The method of claim 6 wherein the inserting step is performed with a satellite telecommand planner of the TAPS.